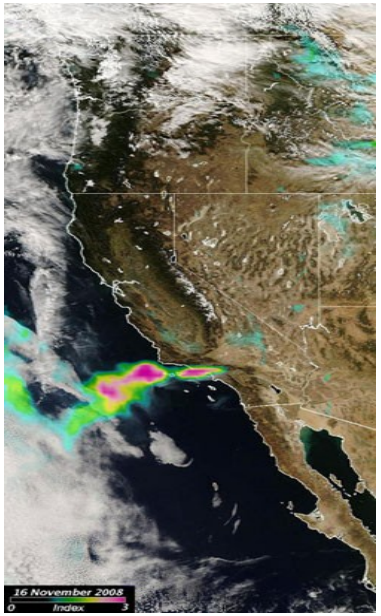
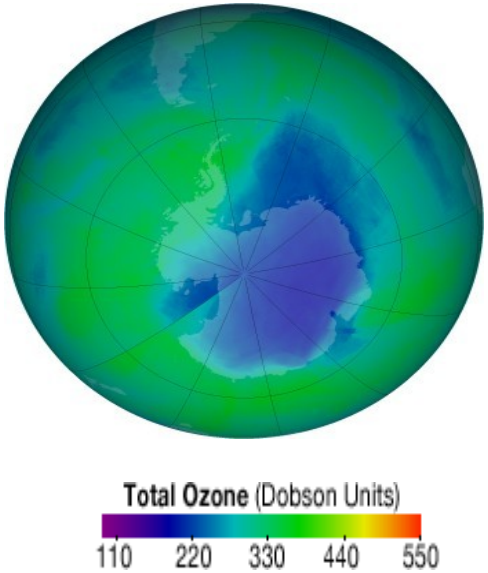
OMI SIPS

- Science Investigator-led Processing System for the Ozone Monitoring Instrument (OMI) on the NASA Aura Spacecraft (2004)
- Joint U.S., Netherlands and Finland Project with international Science Team
- In collaboration with U.S. Team Leader PK Bhartia and Code 613.3

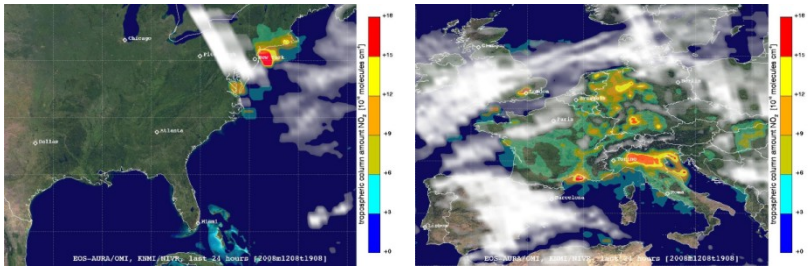
- Science Team Data Systems Support
- Algorithm Integration and Testing
- Science Data Quality Assessment
- Processing includes: Ozone, Aerosols, Clouds, SO2, NO2, BrO, OclO





California fires as seen from MODIS and OMI, Image from Colin Seftor

- Near Real Time processing within 3 hours of observation



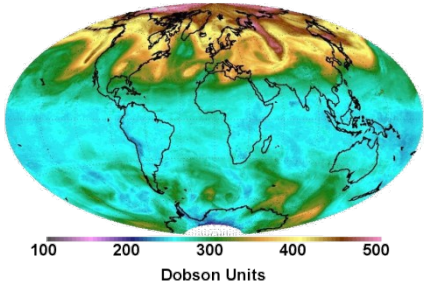
OMI Near Real Time NO2

NPP SDS Ozone PEATE

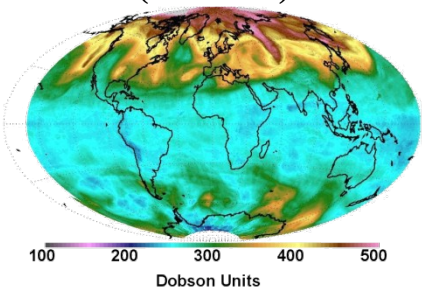
- NPOESS Preparatory Project (NPP) Science Data Segment (SDS) Ozone Product Evaluation and Analysis Tools Element (PEATE)
- Evaluate the operational products from the Ozone Monitoring and Profiler Suite (OMPS) for climate research suitability
- Develop system for operational Limb Ozone Profile processing

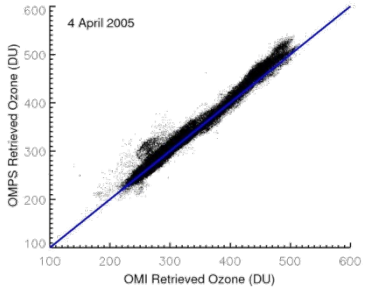
- The Ozone PEATE will reuse the processing system from OMI
- Developing Analysis tools based on OMI heritage products, using the OMPS algorithm
- Evaluation processing for Ozone SDR and EDR
- Evaluation of instrument calibration

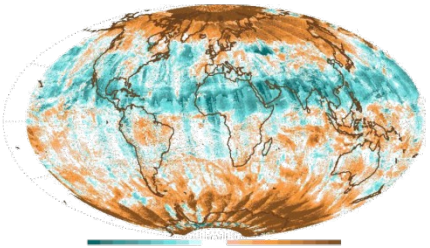
OMI Algorithm Retrieval (OMI Data)



OMPS Algorithm Retrieval (OMI Data)







- Limb Sensor removed by NPOESS Nunn-McCurdy review was remanifested as GFE by NASA/NOAA. The Ozone PEATE will construct a system for calibration/operations and processing the Limb data, including developing the SDR algorithm.
- Ozone PEATE will integrate the LaRC developed EDR algorithm.

Ozone MEaSUREs

- **M**aking **Ea**rth **S**cience Data Records for **U**se in **R**esearch **E**nvironments
- Creating a Long Term Multi-Sensor Ozone Data Record
- PI: Rich McPeters, Code 613.3
- Co-I: Curt Tilmes, Code 614.5 is managing the data processing systems

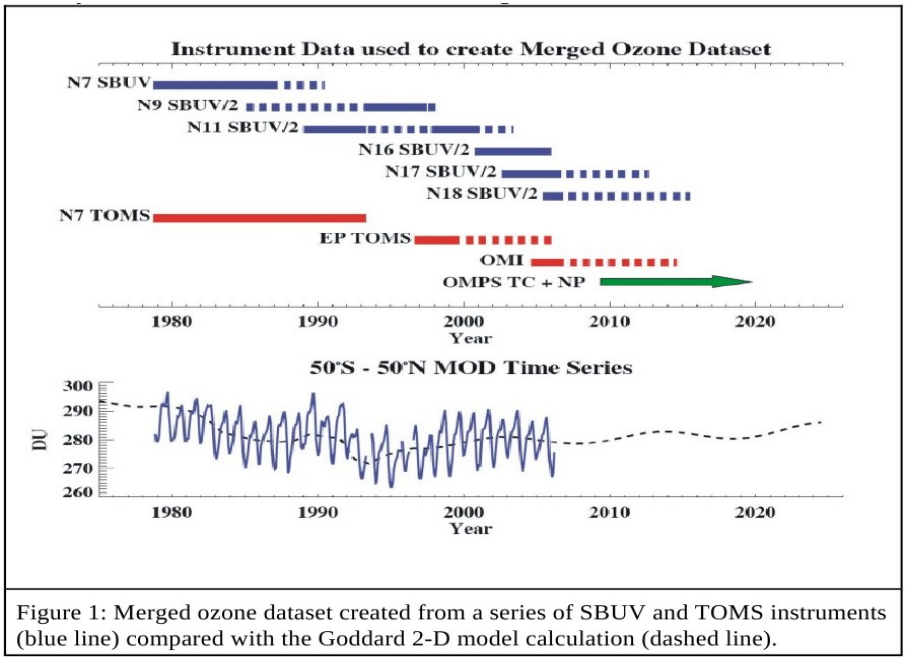
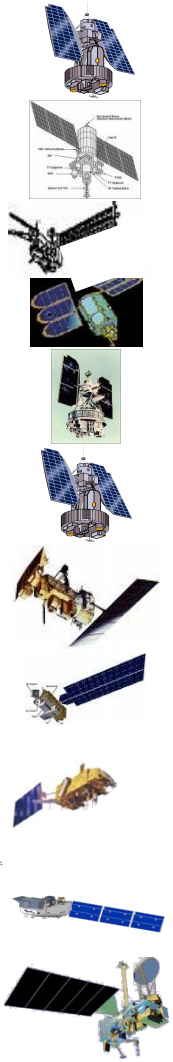


Figure 1: Merged ozone dataset created from a series of SBUV and TOMS instruments (blue line) compared with the Goddard 2-D model calculation (dashed line).

- The system will be support the Ozone scientists developing an Ozone Earth Science Data Record
- Reprocess the entire data record into the best long term data set in a consistent format with complete metadata and provenance tracking.
- Using heritage total ozone data from TOMS missions (Nimbus 7 1978-1993, Earth Probe 1996-2005), OMI (2004-pres)
- Using NOAA SBUV and SBUV/2 instruments which currently produce the most accurate profile data
- Eventually plan to incorporate data from the OMPS on the operational NPP and NPOESS satellites

Atmospheric Composition Processing System (ACPS)



Nimbus 7
TOMS

Meteor 3
TOMS

ADEOS
TOMS

Earth Probe
TOMS

Nimbus 4
BUV

Nimbus 7
SBUV

NOAA 9
:::
NOAA 18
SBUV2

EOS Aura
OMI

METOP
GOME-2

NPP
OMPS

NPOESS
OMPS

Data Processing

- Import/Ingest
- Scheduler/Loader
- Algorithm Execution
- Automatic Export

Bulk Processing

Data Archive and Database

Engineering Support

- Library
- CM Repository
- Software Development

Science Computing Facility

Community Access

- Status Info
- Discussion Forums
- Data Access

Algorithm Updates

Data And Status

- Primary Data (BUV, SBUV, TOMS, OMI, OMPS, GOME-2, ...)
- Ancillary Data (DEM, Snow Map, ...)
- Test Data (synthetic, reformatted, ...)

Teams and Communities:

- Total Column Ozone
- Ozone Profile
- Aerosols
- Clouds
- Nitrogen Dioxide (NO2)
- Sulfur Dioxide (SO2)
- Trace Gases
  - Bromine Monoxide (BrO)
  - Formaldehyde (HCHO)
  - Chlorine Dioxide (OClO)
- Instrument Calibration

NASA Science Teams

Dialogue

General Science Community